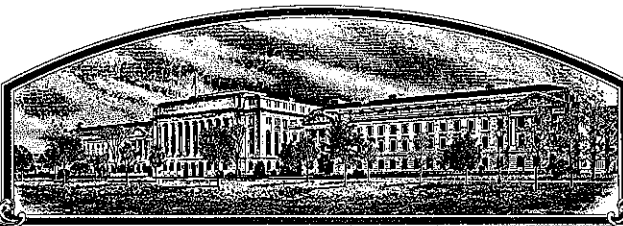


No.

9500324



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Kansas Agricultural Experiment Station

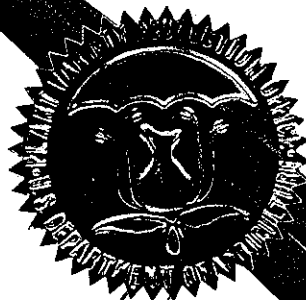
Whereas, THERE HAS BEEN PRESENTED TO THE
Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED, PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. IN THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE VARIETY (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT

'Jagger'



In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this thirtieth day of January in the year of our Lord one thousand nine hundred and ninety-six.

Attest:

Marsha A. Stanton

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

W. L. Hitchman
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE DIVISION - PLANT VARIETY PROTECTION OFFICE

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a).

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions and information collection burden statement on reverse)

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate) Kansas Agricultural Experiment Station Waters Hall, Kansas State University Manhattan, KS 66506		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER KS84W063-9-39-3	3. VARIETY NAME Jagger
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) Waters Hall, Kansas State University Manhattan, KS 66506		5. TELEPHONE (include area code) 913-532-6147	FOR OFFICIAL USE ONLY PVPO NUMBER 9500324 DATE Sept. 25, 1995 FILING AND EXAMINATION FEE \$2450.00 DATE Sept. 25, 1995 CERTIFICATION FEE \$300.00 DATE Dec. 24, 1995
6. FAX (include area code) 913-532-6563		7. GENUS AND SPECIES NAME Triticum aestivum	
8. FAMILY NAME (Botanical) Gramineae		9. CROP KIND NAME (Common name) Wheat	
10. IF THE APPLICANT NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) (Common name) University			
11. IF INCORPORATED, GIVE STATE OF INCORPORATION		12. DATE OF INCORPORATION	
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS Vernon A. Schaffer Department of Agronomy Kansas State University Manhattan, KS 66506-5501			14. TELEPHONE (include area code) 913-532-6115
			15. FAX (include area code) 913-532-6094
16. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)			
a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of the Variety d. <input checked="" type="checkbox"/> Exhibit D. Additional Description of the Variety e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Applicant's Ownership f. <input checked="" type="checkbox"/> Voucher Sample (2,500 viable untreated seeds or, for tuber propagated varieties verification that tissue culture will be deposited and maintained in a public repository) g. <input type="checkbox"/> Filing and Examination Fee (\$2,450), made payable to "Treasurer of the United States" (Mail to PVPO)			
17. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY, AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act) <input checked="" type="checkbox"/> YES (If "yes," answer items 18 and 19 below) <input type="checkbox"/> NO (If "no," go to item 20)			
18. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		19. IF "YES" TO ITEM 18, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? <input checked="" type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input checked="" type="checkbox"/> CERTIFIED	
20. HAS THE VARIETY OR A HYBRID PRODUCED FROM THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES? <input checked="" type="checkbox"/> YES (If "yes," give names of countries and dates) <input type="checkbox"/> NO USA Sept. 94			
21. The applicant(s) declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate. The undersigned applicant(s) is(are) the owner(s) of this sexually reproduced or tuber propagated plant variety, and believes(s) that the variety is new, distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Applicant(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.			
SIGNATURE OF APPLICANT (Owner(s)) George E. Ham		SIGNATURE OF APPLICANT (Owner(s))	
NAME (Please print or type) George E. Ham		NAME (Please print or type)	
CAPACITY OR TITLE Associate Director of the Agriculture Experiment Station	DATE 7/7/95	CAPACITY OR TITLE	DATE

Jagger

Exhibit A. Origin and Breeding

KS82W418/Stephens cross was made in 1984, F_1 grown in the spring greenhouse, 1985.

F_2 planted Fall of 1985 single plant was selected, KS84063-9 based upon disease resistance.

F_3 planted fall of 1987 and heads selected in spring of 1988.

F_4 head rows planted fall of 1988 and a unique head row KS84063-9-39 was selected and bulked, spring 1989.

F_5 KS84063-9-39 was planted in a preliminary yield trial, 1989.

F_6 planted in a second year preliminary trial in 1990.

F_7 planted in the advanced yield trial in 1991. Reselection planted KS84063-9-39-3.

F_8 planted in the elite Kansas Intra State Nursery in 1992.

F_9 planted in the Kansas Intra State Nursery, Kansas Variety Performance Tests and Southern Regional Performance Nursery - 1993.

Jagger is uniform. Variants are limited to: blue green plants at heading that occur at a frequency less than 1 in 100; white to tan color glume plants that occur at a frequency less than 1 in 1,000; and taller plants, red glumed or slightly later plants at a frequency of less than 1 in 10,000 each. Roguing and plant selection continues with the objective of removing variants. The variants as well as the typical plants are commercially acceptable.

Jagger is stable. When sexually reproduced the variety remains unchanged in its essential and distinctive characteristics.

Exhibit B
(Revised 11/27/95)

RECEIVED
USDA-AMS-PVPO

'95 DEC -4 P12:15

Jagger
Novelty Statement

Jagger is most similar in appearance to Arlin of any wheat in the Great Plains, with similar disease resistance. The major difference between 'Jagger' and 'Arlin' are: 'Jagger' is a hard red winter wheat while 'Arlin' is a hard white winter wheat. At maturity 'Jagger' has a brown stripe running the length of the outside edge of both the glume and lemmas. Arlin has no stripe.

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICEEXHIBIT C
(Wheat)

BELTSVILLE, MARYLAND 20705

OBJECTIVE DESCRIPTION OF VARIETY
WHEAT (TRITICUM SPP.)

INSTRUCTIONS: See Reverse.

NAME OF APPLICANT(S)

FOR OFFICIAL USE ONLY

Kansas Agricultural Experiment Station
ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code)

PVPO NUMBER

9500324

VARIETY NAME OR TEMPORARY
DESIGNATION

Jagger

Kansas State University
Waters Hall
Manhattan, KS 66506Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g., 089 or 09) when number is either 99 or less or 9 or less.

1. KIND:

1 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:

2 1 = SPRING 2 = WINTER 3 = OTHER (Specify) 2 1 = SOFT 2 = HARD 3 = OTHER (Specify)2 1 = WHITE 2 = RED 3 = OTHER (Specify)

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:

227 FIRST FLOWERING 232 LAST FLOWERING

4. MATURITY (50% Flowering):

5 NO. OF DAYS EARLIER THAN 2 1 = ARTHUR 2 = SCOUT 3 = CHRIS
 NO. OF DAYS LATER THAN 4 = LEMHI 5 = NUGAINE 6 = LEEDS

5. PLANT HEIGHT (From soil level to top of head):

86 CM. HIGH
 CM. TALLER THAN
18 CM. SHORTER THAN 2 1 = ARTHUR 2 = SCOUT 3 = CHRIS
4 = LEMHI 5 = NUGAINE 6 = LEEDS

6. PLANT COLOR AT BOOTING (See reverse):

2 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHUR COLOR:

1 1 = YELLOW 2 = PURPLE

8. STEM:

1 Anthocyanin: 1 = ABSENT 2 = PRESENT 1 Waxy bloom: 1 = ABSENT 2 = PRESENT
1 Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT 1 Internodes: 1 = HOLLOW 2 = SOLID
04 NO. OF NODES (Originating from node above ground) 18 CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:

1 Anthocyanin: 1 = ABSENT 2 = PRESENT 1 Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:

1 Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 2 Flag leaf: 1 = NOT TWISTED 2 = TWISTED
3 = OTHER (Specify): 1 Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT 1 Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT
☒ ☒ MM. LEAF WIDTH (First leaf below flag leaf) 20 ☒ ☒ CM. LEAF LENGTH (First leaf below flag leaf):per letter
matt 12-4-95

11. HEAD:

☐ 1 Density: 1 = LAX 2 = DENSE ☐ 2 Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE
4 = OTHER (Specify) _____

☐ 4 Awedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

☐ 7 Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED
5 = BROWN 6 = BLACK 7 = OTHER (Specify): Tan with brown line on the outside edge

☐ 0 ☐ 7 CM. LENGTH ☐ 1 ☐ 4 of glumes & lemma
MM. WIDTH

12. GLUMES AT MATURITY:

☐ 3 Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.) 3 = LONG (CA. 9 mm.)
☐ 3 Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.)
3 = WIDE (CA. 4 mm.)

☐ 3 Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED
4 = SQUARE 5 = ELEVATED 6 = APICULATE ☐ 3 Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

13. COLEOPTILE COLOR:

☐ 1 1 = WHITE 2 = RED 3 = PURPLE

14. SEEDLING ANTHOCYANIN:

☐ 1 1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT:

☐ 2 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

☐ 1 Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL ☐ 2 Check: 1 = ROUNDED 2 = ANGULAR

☐ 2 Brush: 1 = SHORT 2 = MEDIUM 3 = LONG ☐ 1 Brush: 1 = NOT COLLARED 2 = COLLARED

6 ☒ Phenol reaction (See instructions): 1 = IVORY 2 = FAWN 3 = LT. BROWN
4 = BROWN 5 = BLACK 6 = OTHER = Brown-Black per letters MAY 12-4-95

☐ 3 Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) _____

☐ 5 ☐ 5 MM. LENGTH ☐ 2 ☐ 5 MM. WIDTH ☐ 3 ☐ 1 GM. PER 1000 SEEDS

17. SEED CREASE:

☐ 2 Width: 1 = 60% OR LESS OF KERNEL 'WINOKA'
2 = 80% OR LESS OF KERNEL 'CHRIS'
3 = NEARLY AS WIDE AS KERNEL 'LEMHI'
☐ 1 Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT'
2 = 35% OR LESS OF KERNEL 'CHRIS'
3 = 50% OR LESS OF KERNEL 'LEMHI'

18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

☐ 2 STEM RUST (Races) ☐ 2 LEAF RUST (Races) ☐ 0 STRIPE RUST (Races) ☐ 0 LOOSE SMUT
☐ 1 POWDERY MILDEW ☐ 0 BUNT ☐ OTHER (Specify) _____

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

☐ 0 SAWFLY ☐ 1 APHID (Bydv.) ☐ 1 GREEN BUG ☐ 0 CEREAL LEAF BEETLE
☐ OTHER (Specify) _____ HESSIAN FLY RACES: ☐ 1 GP ☐ 0 A ☐ 0 B ☐ 0 C
☐ 1 D ☐ 0 E ☐ 0 F ☐ 0 G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Karl	Seed size	2180
Leaf size	2180	Seed shape	2180
Leaf color	1ke	Coleoptile elongation	Karl
Leaf carriage	2180	Seedling pigmentation	Karl

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

- (a) L.W. Briggie and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.
- (b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. (See attachment.)

APPLICATION TO
NATIONAL SMALL GRAIN VARIETY REVIEW BOARD

VARIETY DESCRIPTION
FOR

WHEAT (Triticum aestivum L.)

**Completed forms should be returned to: Association of Official Seed Certifying Agencies,
Box 9812, Mississippi State, MS 39762. Telephone: (601) 325-4587.**

- I. Applicant's Name Kansas Agricultural Experiment Station Date 12/13/93
Address Waters Hall, Manhattan, KS 66506 Phone (913) 532-6147
- II. Sponsoring Institution Kansas State University
Address Manhattan, KS 66506
- III. Breeders Name Dr. R.G. Sears
Address Agronomy Dept., Throckmorton Hall, Manhattan, KS 66506-5501
- IV. Variety Name Jagger Exp. Designation KS84063-9-39-3
- V. Origin and Breeding History (Summarize the breeding method(s) used to develop the variety). Attach separate sheet.
- VI. Novelty Statement (Describe the distinguishing characteristics that can be used to identify this variety, as compared to a known variety). Attach separate sheet.
- VII. Has Plant Variety Protection been applied for? ☐ YES ☐ NO ☒ ANTICIPATED
- Do you approve putting this Variety Description into the PVP computer? ☒ YES ☐ NO
- Will the application specify that the variety is to be sold by variety name only as a class of certified seed? ☒ YES ☐ NO
- If "YES", which classes of production beyond Breeders Seed?
☒ FOUNDATION ☒ REGISTERED ☒ CERTIFIED

Please use additional pages for narrative descriptions or supporting data.

Jagger

Attachment V. Origin and Breeding

KS82W418/Stephens cross was made in 1984, F_1 grown in the spring greenhouse, 1985.

F_2 planted Fall of 1985 single plant was selected, KS84063-9 based upon disease resistance.

F_3 planted fall of 1987 and heads selected.

F_4 head rows planted fall of 1988 and a unique head row KS84063-9-39 was selected and bulked, spring 1989.

F_5 , KS84063-9-39 was planted in a preliminary yield trial, 1989.

F_6 planted in a second year preliminary trial in 1990.

F_7 planted in the advanced yield trial in 1991. Reselection planted KS84063-9-39-3.

F_8 planted in the elite Kansas Intra State Nursery in 1992.

F_9 planted in the Kansas Intra State Nursery, Kansas Variety Performance Tests and Southern Regional Performance Nursery - 1993.

ATTACHMENT VI

Novelty Statement

Jagger is an awned, hard red winter wheat. At maturity it has a buckskin spike color, characterized by a brown stripe running the length of the outside edge of both glume and lemmas. Jagger would be described as a medium short semidwarf, approximately 86cm in height under average Kansas conditions. During vegetative growth Jagger is very dark green, darker than either Karl or Karl 92 but comparable to Ike. Jagger is comparable to Karl or Karl 92 in plant height. Jagger is equal to Newton in winterhardiness but less than Karl 92. Jagger tends to fill at least 3 and often 4 seeds per spikelet under Kansas conditions.

Jagger is resistant to stem rust, leaf rust, soil borne mosaic virus, spindle streak mosaic virus, tan spot, and speckled leaf blotch. Jagger is moderately resistant to glume blotch, bacterial streak and Wheat Streak Mosaic Virus. It is moderately susceptible to Powdery Mildew. Jagger is susceptible to Hessian fly, green bugs and Russian Wheat aphids.

Jagger is most similar to Arlin being comparable in heading date and spike type and productivity. Jagger is much darker green than Arlin during vegetative and reproductive growth. Jagger represents the best present combination of disease resistance when compared to any currently grown Kansas wheat. At maturity Jagger has upright to moderately nodding spikes. Jagger represents an approximate 15% yield improvement over Karl 92.

VIII. ADDITIONAL INFORMATION REQUIRED IF VARIETY IS TO BE CERTIFIED

- A. A statement delineating the geographic area or areas of adaptation of the variety with evidence of the performance of the variety including comparative yield data, insect and disease resistance and other factors supporting the identity of the variety. (Attach)
- B. The procedures to be used in the maintenance/regeneration of breeder seed.
Breeders seed will be maintained by intensive rouging and progeny row
increases if necessary.

- C. A description of the manner in which the variety is constituted when a particular cycle of reproduction or multiplication is specified. State generations to be recognized beyond Breeder Seed.
Generations recognized beyond Breeder Seed: Foundation, Registered and
Certified

- D. Any additional restrictions on the variety, specified by the breeder, with respect to geographic area of seed production, age of stand, or other factors affecting genetic purity.

- E. Do you want acreage certified each year to be published by AOSCA and certifying agencies?
☒ YES ☐ NO
- F. If this variety is accepted by official certifying agencies, when will seed first be offered for sale, and what certified class will it be? 1994 Foundation

Attachment VIII. A.

Jagger is adapted to all wheat growing areas in Kansas. It has or is being tested in all wheat growing regions of the southern Great Plains.

1020

10 15 20 25



Jagger

Attachment G.

Jagger is an increase of an F₄ head row selected from the cross KS82W418/Stephens. The cross was made by Dr. J.M. Moffatt in 1984. Jagger has been tested in Kansas nurseries from 1989-1993 and has been planted in the Kansas Intrastate Nursery, Kansas Performance Tests and Southern Regional Performance Nursery in 1993-94.

Jagger is an early hard red winter wheat with very good disease resistance. It currently represents the most complete protection against prevailing wheat diseases in Kansas' compared to currently grown varieties. Jagger is adapted to all wheat growing areas of Kansas. It is very dark green during the vegetative through boot stages of development. Jagger is very early in maturity, equal to Arlin and one day earlier than Karl 92. At maturity Jagger has a tan colored (buckskin) spike with a 1-2mm dark brown line on the outside edge of both the glume and lemma. Variants are limited to: blue-green plants that occur at a frequency less than 1 in 100 plants, white to tan color glumes that occur at a frequency less than 1 in 1,000, tall plants occurring less than 1 in 1,000, and red glumed or slightly latter plants at a frequency at less than 1 in 10,000.

Jagger is resistant to stem rust, leaf rust, soil borne mosaic virus, spindle streak mosaic virus, tan spot, and speckled leaf blotch. Jagger is moderately resistant to glume blotch, bacterial streak and Wheat Streak Mosaic Virus. It is moderately susceptible to Powdery Mildew. Jagger is susceptible to Hessian fly, green bugs and Russian Wheat aphids.

Breeder's seed stock will be maintained by Mr. Vernon Schaffer, Director, Foundation Seed Program, Agronomy Department, Kansas State University, Manhattan, KS. Breeders, foundation, registered and certified seed classes will be used. Foundation seed is planned to be offered for sale in August, 1994. Applications for PVP, Title V option is anticipated. Acreage will be published by AOSCOA and certifying agencies

VARIETY DESCRIPTORS

WHEAT (Triticum aestivum L.)

1. KIND OF WHEAT: (circle one)

COMMON DURUM EMMER SPELT POLISH POULARD CLUB

a. If common, type of wheat Hard red winter
(Example: hard red winter)

2. FACTORS SUPPORTING AREA OF ADAPTATION:

a. Yield and agronomic data (describe methods used for testing and evaluating variety).

Yield and agronomic data are collected from trials planted as Randomized Complete Block's with 3-4 replications. Advanced nurseries are planted at 6 locations, elite lines evaluated at 18 locations. Planted in preliminary (see attachment)

b. Reaction to major diseases supporting the recommended area of adaptation (list)

Resistant to soil borne wheat, mosaic virus, spindle streak mosaic virus, septoria triticia, tan spot, stem rust and leaf rust. Moderately resistant to wheat streak mosaic, septoria nodorum and bacterial streak. Moderately susceptible to powdery mildew.

c. Reaction to major insects supporting the recommended area of adaptation (list)

Susceptible to Hessian Fly, Greenbug and Russian Wheat Aphid.

d. Describe the processing quality of this variety as compared to a known variety.

Jagger is equal in protein concentrations to Karl 92. It has similar mixing time and tolerance to Arkan. It has good baking characteristics, similar to Karl 92.

e. Other factors:

Intermediate reaction to aluminum toxicity.

3. PLANT CHARACTERISTICS:

a. Habit of growth (circle one) WINTER SPRING OTHER _____b. Coleoptile color (circle one) WHITE RED OTHER _____c. Coleoptile expression (circle one) SHORT MEDIUM LONG

SHORTER THAN SAME AS LONGER THAN Newton
(known variety)

d. Juvenile plant growth habit (circle one) PROSTRATE SEMI-ERECT ERECT

* 4. LEAVES:

a. Color at booting (circle one) YELLOW-GREEN GREEN BLUE-GREEN GRAY-BLUE
 Appears most similar to like (known variety)

b. Flag leaf at booting

(circle one)

(circle one)

(circle one)

ERECT

TWISTED

WAXY BLOOM

RECURVED

NOT TWISTEDNO WAXY BLOOM

c. First leaf below flag leaf

1. Width in millimeters (circle one and indicate range)

NARROW 10 to 12

MID-WIDE _____ to _____

WIDE _____ to _____

2. Length in centimeters (circle one and indicate range)

SHORT _____ to _____

MID-LONG 20 to 25

LONG _____ to _____

3. Pubescence present? YES

NO

d. Auricles

1. Color (circle one)

WHITE

PURPLE

OTHER _____

2. Pubescence present? YES

NO* 5. TIME OF HEADING OR ANTHESIS (circle one)EARLY

MIDSEASON

LATE

OTHER _____

1 AVERAGE NUMBER OF DAYS EARLIER THAN Karl 92
OR (known variety)

_____ AVERAGE NUMBER OF DAYS LATER THAN _____
 (known variety)

* 6. STEM

a. Color (circle one)

WHITE

PURPLE

OTHER _____

b. Strength (circle one)

WEAK

MID-STRONG

STRONG

WEAKER THAN

EQUAL TO

STRONGER THAN

2163

(known variety)

- c. Waxy bloom present? (circle one) YES NO
- d. Internodes are (circle one) HOLLOW SOLID
- e. Pubescence present on last internode of rachis? (circle one) YES NO

* 7. PLANT HEIGHT:

- a. Relative (circle one or range)
SHORT MEDIUM SHORT MEDIUM MEDIUM TALL TALL
- b. Average height 150.86 centimeters
- c. 2 CENTIMETERS TALLER THAN Karl 92
OR
CENTIMETERS SHORTER THAN (known variety)

* 8. SPIKE:

- a. Color of anthers (circle one) YELLOW PURPLE
- b. Awnedness (circle one)
AWNLESS APICALLY AWNLETTERED AWNLETTERED AWNED
- c. Length of awns (circle one and indicate range in centimeters)
SHORT _____ to _____ MID-LONG 4.5 to 6 LONG _____ to _____
- d. Size
- 1) Length of spike (circle one and indicate range in centimeters)
SHORT _____ to _____ SHORT TO MID-LONG 6 to 8
MIDLONG _____ to _____ LONG _____ to _____
- 2) Width (circle one and indicate range in millimeters)
NARROW 10 to 14 MID-WIDE _____ to _____ WIDE _____ to _____

- e. Shape (circle one or range) TAPERING OBLONG CLAVATE ELLIPTICAL
OTHER _____
- f. Density (circle one or indicate range) LAX MID-DENSE DENSE
- g. Color of awns at maturity (circle one) BLACK BLUE BROWN GREY
PURPLE RED TAN WHITE/AMBER YELLOW
OTHER (EXPLAIN) _____
- h. Position of spike at maturity (circle one) ERECT INCLINED NODDING
- * 9. GLUMES:
- a. Color at maturity (circle one) BLACK BLUE BROWN GREY
PURPLE RED TAN WHITE/AMBER YELLOW
OTHER (EXPLAIN) Tan with brown line on the outside edge of glumes and lemmas
- b. Length (circle one and indicate range in millimeters)
SHORT _____ to _____ MID-LONG _____ to _____ LONG 8.6 to 10
- c. Width (circle one and indicate range in millimeters)
NARROW _____ to _____ MID-WIDE _____ to _____ WIDE 4 to 5
- d. Shoulder
- 1) Width (circle one and indicate range in millimeters)
NARROW 2.5 to 3 MID-WIDE _____ to _____ WIDE _____ to _____
- 2) Shape (circle one or range) WANTING OBLIQUE ROUNDED
SQUARE ELEVATED APICULATE
- e. Beak (circle one and indicate range in millimeters)
- 1) Width NARROW .5 to 1 MID-WIDE _____ to _____ WIDE _____ to _____
- 2) Length VERY SHORT _____ to _____ SHORT _____ to _____
MEDIUM SHORT _____ to _____ MEDIUM _____ to _____
MEDIUM LONG 5 to 7 LONG _____ to _____ VERY LONG _____ to _____
- 3) Shape of apex (circle one) ACUMINATE OBTUSE ACUTE
- f. Pubescence of glume (circle one) — (-1) -2 3 -4 -5 -6 -7 -8 9
(1 = none or glabrous)

*10. SEED CHARACTERISTICS:

a. Color (circle one) WHITE AMBER RED PURPLE OTHER _____

b. Size (circle one and indicate range in millimeters)

1) Length SHORT 5 to 6 MID-LONG _____ to _____ LONG _____ to _____

SHORTER THAN

SAME AS

LONGER THAN

Karl

(known variety)

2) Width NARROW _____ to _____

MID-WIDE 2.50 to 3.25

WIDE _____ to _____

NARROWER THAN

SAME AS

WIDER THAN

Karl

(known variety)

3) Average weight per 1,000 seeds

LIGHTER THAN

SAME AS

HEAVIER THAN

2180

(known variety)

c. Shape (circle one)

OVATE

OVAL

ELLIPTICAL

d. Brush

1) Size (circle one)

SMALL

MEDIUM

LARGE

2) Length (circle one)

SHORT _____ to _____

MEDIUM 0.5 to 1

LONG _____ to _____

3) Collared? (circle one)

YES

NO

e. Crease

1) Width (circle one)

NARROW

MID-WIDE

WIDE

2) Depth (circle one)

SHALLOW

MID-DEEP

DEEP

f. Cheek (circle one)

ROUNDED

ANGULAR

g. Germ

1) Size (circle one)

SMALL

MEDIUM

LARGE

h. Seeds of this variety--are most similar to _____

2180

(known variety)

*11. VARIANT (see definition):

Describe variants observed, including frequency of occurrence. Not to include off-type.

Variants are limited to: blue green plants that occur at a frequency less than 1 in 100; plants with white to tan color glumes that occur at a frequency less than 1 in 1,000; and taller plants, red glumed or slightly later plants at a frequency of less than 1 in 10,000.

*12. LIST ANY OTHER TRAITS OR SPECIAL MARKERS THAT MAY BE HELPFUL IN IDENTIFYING THE VARIETY, INCLUDING CHARACTERISTICS DETERMINED BY USE OF BIOCHEMICAL METHODS (e.g. phenol reaction or electrophoresis).

Jagger has a brown-black reaction to the phenol test.

KEY * HIGH PRIORITY DESCRIPTORS

Report to the Variety Release Committee, 1993
Status of Selections KS84W063-9-39-3, HBE0363-134 and HBF0263-137

Jagger
Agronomic Data

KS84W063-9-39-3

~~KS84W063-9-39-3~~ is a hard red winter wheat selected from the cross KS82W418/Stephens made by John Moffatt in 1984. Head row selections were bulked in 1989 and this line has been tested the past 4 years as KS84W063-9-39-3.

KS84W063-9-39-3 is widely adapted across the state and over 3 years and 15 locations averages a 10.8 and 5.4 bu/a yield advantage over Karl/Karl 92 and 2163, respectively (Table 1). Test weight patterns for KS84W063-9-39-3 are average being approximately one pound/bushel lighter than Karl but 2 pounds/bushel heavier than 2163.

KS84W063-9-39-3 is a medium height semidwarf with very good straw strength. It has excellent disease resistance for many of the important pests that attack wheat in Kansas (Tables 3 & 4). Especially important is that KS84W063-9-39-3 has excellent resistance to leaf rust, a disease that has caused significant yield losses in the central and eastern region of Kansas the past 10 years. It is also early with an intermediate reaction to aluminum toxicity. Its performance on low pH soils has been significantly better than Karl and comparable to 2163, although in seedling tests it has not rated as good as 2163.

Quality Data

KS84W063-9-39-3 has been evaluated for milling and baking quality in 1992 and 1993 in both eastern and western Kansas. Compared to Karl, KS84W063-9-39-3 has harder kernels, approximately ½ % lower protein concentration, and shorter mixing time. Its baking properties appear comparable to Karl, while it appears to be slightly lower in milling quality, but entirely acceptable.

Status

Currently approximately 14 bushels of breeders seed were produced from the 1993 crop. Samples have also been harvested for evaluation in the small scale samples of the Wheat Quality Council.

Recommendation

Permission is sought to increase for release consideration at the Fall Cereal Conference in 1994. KS84W063-9-39-3 will be entered in the 1994 Variety Performance Tests and the Southern Regional Performance Nursery. Plantings for a Large Scale Mill and Bake growout at Hutchinson and Hays will be done.

Table 1: Three year yield and test weight summaries (1991-1993)
for 2 standard check varieties and the selection KS84W063-9-39-3

Selection	Yields (bu/a)			
	1993	1992	1991	Ave.
KS84W063-9-39-3	61.1	65.0	62.2	62.7
Karl/Karl 92	49.6	55.0	51.1	51.9
2163	54.0	56.3	61.6	57.3

Selection	Test Weight (lbs/bu)			
	1993	1992	1991	Ave.
KS84W063-9-39-3	57.0	59.0	57.8	57.9
Karl/Karl 92	58.2	59.4	58.1	58.5
2163	55.8	55.6	57.1	56.1

Table 3: Agronomic summary of 3 standard check varieties and KS84W063-9-39-3 tested in the 1993 Kansas Intrastate Nursery

Selection	Mat ¹	Ht ²	WH ³	Sht ⁴	Lod ⁵	Al ⁶
1 KARL 92	E	ms	3	4	4	S
2 2163	ME	m	5	6	2	T
3 TOMAHAWK	M	mt	2	5	4	S
12 KS84W063-9-39-3	VE	ms	5	4	2	I

- ¹ Mat=Heading date, maturity
² Ht=Plant Height, medium, medium tall, medium short
³ WH=winterhardiness 1=best, 9=worst
⁴ Sht=shattering potential 1=best, 9=worst
⁵ Lod=lodging potential 1=best, 9=worst
⁶ Al=Aluminum tolerance, s=susceptible, t=tolerant, I=intermediate

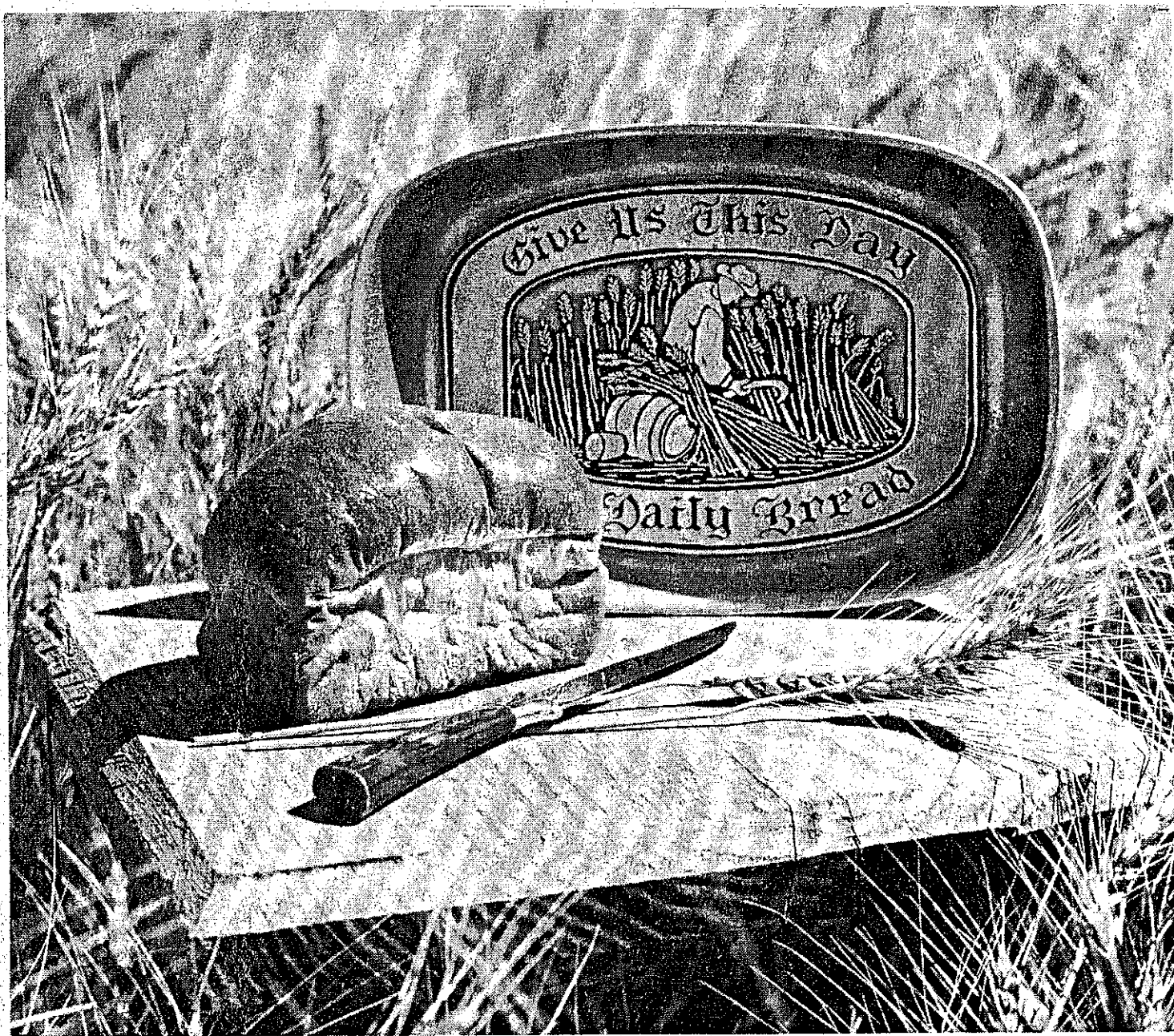
Table 4: Reactions to diseases and insects for 3 standard check varieties and KS84W063-9-39-3 tested in the 1993 Kansas Intrastate Nursery.

Selection	Hf ¹	Sv ²	Pm ³	St ⁴	Hb ⁵	Pg ⁶	Pr ⁷	GLD ⁸
1 KARL 92	S	R	MR	MS	R	MS	MS	7
2 2163	R	MR	R	R	MS	MR	MR	3
3 TOMAHAWK	S	MR	MR	VS	S	MR	R	7
12 KS84W063-9-39-3	S	R	S	R	MR	MS	R	2

- ¹ Hf=Hessian fly reaction, Jim Hatchett & Ken Oppenlander
² Sv=Wheat Soilborne & Spindle Streak Mosaic Virus Complex
³ Pm=Powdery Mildew
⁴ St=Septoria triticii
⁵ Hb=Head blight reaction (S. triticii & S. nodorum)
⁶ Pg=Stem rust, seedling reaction
⁷ Pr=Leaf rust, field reaction
⁸ GLD=Green Leaf Duration, flag leaves ability to stay green under disease pressure from S.triticii & leaf rust primarily; 1=best, 9=worst

SEALS
9500324

Milling and Baking Test Results *for* Hard Winter Wheats *Harvested in 1994*



45th Report on Wheat Quality
Wheat Quality Council

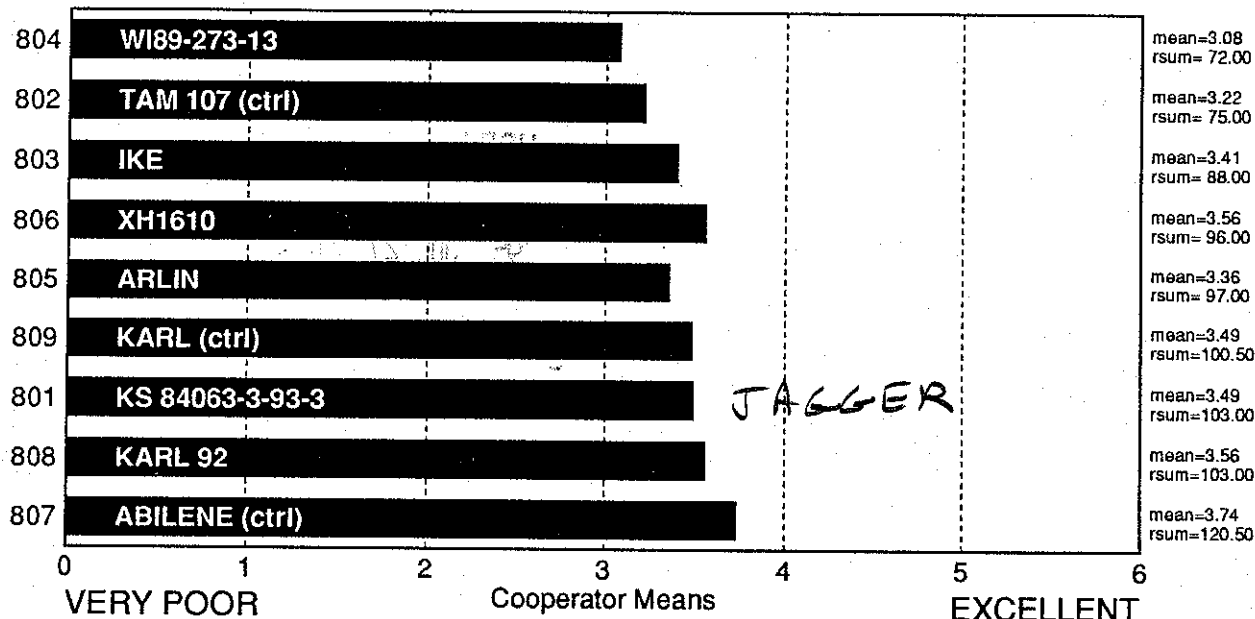
A coordinated effort by the agricultural and baking industries to improve wheat

OVERALL BAKING QUALITY (Uniform Growouts)

Variety order by rank sum

No samples different at 5.0% level of significance.

ncoop=19
chisq=12.57
chisqc=12.74
cvchisq=15.51



COOPERATOR'S COMMENTS (Uniform Growouts)

Milling
1. ASH
protein
2. recovery

801 KS 84063-3-93-3

- very open grain
- FAIR-TIGHT
- poor crust color
- HEIGHT 5 7/16
- dull, sl irregular, good texture, fair body
- SLIGHTLY YELLOW
- RHEOGRAPH ABSORPTION 67.8 FATIGUE 38
- BEST INTERIOR SCORES
- Weak at make up.
- long mix, gassy at makeup, elastic tough
- Course texture.
- poor volume for protein content

Bakers 2nd

REACTION OF SELECTED WINTER WHEAT CULTIVARS TO CEPHALOSPORIUM STRIPE, 1994: The experiment was conducted on a Chase silty clay loam (pH=6.5) near Manhattan, KS. Experimental design was a randomized split plot with eight cultivars as the main plots and the presence or absence (check) of inoculum as the sub-plots. There were four replications, plots were 4 ft X 12.5 ft, and seed was sown 22 Sep 93 using a cone-type planter with double-disc openers. Plots were inoculated with air-dried, oat-kernel inoculum of *C. gramineum* (50 g/plot) introduced with the seed at planting. The cultivars Sturdy and Plainsman V were chosen as the susceptible and resistant checks, respectively. Plainsman V is the most resistant cultivar to Cephalosporium stripe known under Kansas conditions. Disease incidence (percentage symptomatic plants) was determined on 18 May and 8 Jun only for inoculated plots. Grain yields were determined on 21 Jun using a small-plot combine. Incidence and yield values were statistically analyzed by analysis of variance (ANOVA) with means separated by least significant difference (LSD, $P=0.05$). Yield loss was calculated by comparing inoculated with check plots within a replication. Disease incidence and yield loss were analyzed using a randomized complete block model.

Cephalosporium stripe only occurred in the inoculated plots. Grain yield potential was about average for the site (50-70 bu/A) but well above the Kansas state average (38 bu/A). Severe Cephalosporium stripe developed as evidenced by the 59.5% yield loss measured for the susceptible check Sturdy. Disease incidence rated on 18 May and 2 Jun was positively correlated with amount of yield loss ($r^2=0.955-0.679$, $P<0.001$ and $P<0.02$, respectively). As expected, the moderately-resistant check, Plainsman V, had significantly lower yield loss than Sturdy. However, Jagger had significantly lower yield loss than Plainsman V. If this response is repeatable, that cultivar will be the most resistant commercial cultivar tested to date in Kansas. KS92P0263-137, an advanced breeding line being prepared for commercial release, also showed moderate resistance to Cephalosporium stripe.

Cultivar	Cephalosporium inoculum ²	Cephalosporium stripe incidence (%) ¹		Grain yields	
		18 May	2 Jun	(bu/A)	Loss ³ (%)
Jagger	-	-	-	53.3 cd	-
Jagger	+	19.8 ⁴ e	29.5 d	41.4 fg	19.8 e
KS92P0263-137	-	-	-	57.6 bc	-
KS92P0263-137	+	25.3 de	39.0 d	41.0 fg	28.7 de
Plainsman V	-	-	-	49.2 def	-
Plainsman V	+	32.3 de	43.5 cd	30.7 hij	37.3 cd
Karl 92	-	-	-	42.8 efg	-
Karl 92	+	36.3 cde	71.8 ab	25.8 jk	39.3 bcd
KS92P0363-134	-	-	-	64.1 b	-
KS92P0363-134	+	42.8 bcd	41.3 d	35.0 ghi	42.2 bcd
Abilene	-	-	-	72.7 a	-
Abilene	+	50.3 bc	57.5 bc	36.7 gh	49.1 abc
2163	-	-	-	62.6 b	-
2163	+	55.5 ab	67.0 ab	28.2 ijk	54.8 ab
Sturdy	-	-	-	50.8 cde	-
Sturdy	+	69.3 a	74.8 a	20.8 k	59.5 a

¹Percentage symptomatic plants; no Cephalosporium stripe was observed in the noninoculated plots

²Air-dried, oat kernel inoculum of *C. gramineum* added with the seed at planting (50 g/plot)

³Relative to the noninoculated check (noninoculated minus inoculated divided by noninoculated)

⁴Means of four replications and values within a column followed by a common letter are not significantly different according to ANOVA and LSD ($P=0.05$)

yield trial in 1989 and 1990, planted in advanced yield trials in 1991; planted in the elite Kansas Intrastate Nursery in 1992. In 1993 Jagger was planted in the elite Kansas Intrastate Nursery, Kansas Variety Performance Tests and the Southern Regional Performance Nursery.

Exhibit E. Statement of the Basis of Applicant Ownership

The variety for which Plant Variety Protection is hereby sought was developed by Dr. R.G. Sears, an employee of Kansas State University Experiment Station, all rights to any invention, discovery, or development made by the employee while employed by Kansas State University Experiment Station, were assigned by Kansas State University Experiment Station with no rights of any kind retained by the employees.

Exhibit E

Statement of the basis of ownership

1. Does the applicant own all rights to the variety? Yes X No
If no, please explain.

2. Is the applicant (individual or company) a U.S. national or U.S. based company? Yes X No
If no, give country

3. Is the applicant the original breeder? Yes No X
If no, please answer the following:

- a. If original rights to variety were owned by individual(s):
Is (are) the original breeder(s) a U.S. national(s)? Yes X No
If no, give country

- b. If original rights to variety were owned by a company:
Is the original breeder a U.S. based company? Yes No
If no, give country

Note:

Plant variety protection can be afforded only to variety owners (not licensees) who meet the following criteria.

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original breeder, both the original breeder and the applicant must meet the above criteria.

The original breeder may be the individual or company who directed final breeding. See PVPA Section 41(a)(2) for definition.
